

Coll. 482
1877-79 (5)
1865-87

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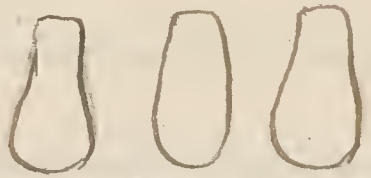
Coll. 482 (5)

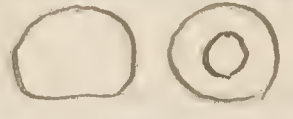
1877-79


1885-87

Fort Bridger, Wyoming T. July 24, 1877

In water from a pool with abundance
of *Foraminalis*.

Diffugia pyriformis  of coarse stony.

Diffugia globularis  of yellowish
particles and siliceous grains

Diffugia manusiformis  of same
construction as last. common, of coarse stony.

Diffugia with trilobate mouth. of stony.

Also a variety as represented in figure of
July 24 composed of thin transparent plates of
various forms & sizes, with double outlined dotted
intervals. See account of July 30th.

Echinopuffis of several varieties

Arella vulgaris. Hemispherical form
with cupped depressions, various shades of
color, common. No tubercles round mouth.
Arella of discoid form and large mouth.
concave beneath and obtusely rounded margin.
Common.

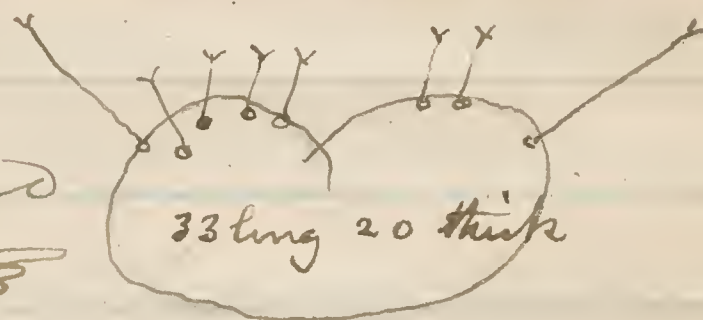
Cyphoderia margaritacea.

Euglypha alveolata - spineless

Trinema acinus.

July 25. *Echinocystis viridis*. In same water as before. Fine green color and active movement. Individual No 1. Appeared only to have one kind of spines, and these the long ones which appear scarcely fucate at the free end. The spines were thickly covered and clean at base. Body slightly changed in form from the sphere. Indiv. No 2 Similar but with the spines more distinctly fucate.


An empty skin discovered as represented in figure:



Colorless. Thickly covered with short fucate spines about 4 long and the fucation 1 diameter, the fewer and larger spines from 10 to 15 with fucation about half extent of small ones. Disks at base scarcely 1 in diameter. No 7 S. H.

A second observed, oval 30 by 20 with spines as in former.

Arcella vulgaris. Hemispherical cupped on surface 13 wide 8 high, mouth 3 high & 3 wide with No 7. Common form. Various hues of brown.

Anuclea - limax like  20 by 10.

no nucleus observable. In progression the pseudopod appeared as abrupt hernia-like protrusion first on one side & then the other of the fore part & then in advance. Vacuoles confined to posterior two thirds.

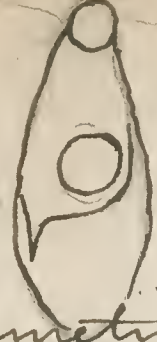
Entosarc finely granular with crasser ones, and also darkly defined oil-like globules scattered throughout.

Anuclea zonalis observed.

Lecythinium hyalinum? 8-8- at position of mouth 4 wide, mouth 2? nucleus 4? included $1\frac{1}{2}$ dark granules at middle of entosarc $\frac{1}{2}$

Frequently large globular masses of sarcode protruded from mouth containing vacuoles & fine granules.

Fig. 1 of July 25. As first seen. Middle space of entosarc with a zone of darkly colored granules $\frac{1}{2}$ diam. Protruded sarcode with large vacuoles, which changed from time to time. Fig. 2 had a smaller ball of exuded sarcode. Fig. 3. The protruded ball of sarcode gradually enlarged to size of the parent, and then contained four large vacuoles from 3 to 4 diam. also an oval one in neck, which became pear shaped and finally spherical as it was extruded from the parent into the protruded sarcode. The latter enlarged so as to exceed parent measuring 9 its vacuoles diminished to 3 large ones, of which largest was 6 diam another 5 & the other 4.

Cyphodeira. with  test about half occupied by sarcoid the fundus of which attached by a single thread unsymmetrically on one side as in outline.


July 26. ^{Acanthocypris} ~~Echinocypris~~ shell. See drawing. It was crowded with long and short furcate spines. Ovoid, whitish 35 by 25, contained a few scattered green grains about 1 diam. Also an oval ovum-like body 19-9 with faint reddish brown granular contents.

A heliozoan in all respects resembling Acanthocypris viridis, but with the spines not distinctly ending in a forked manner. They appeared thickened at end but not furcate. Another heliozoan of globular form, soft, finely granular and faintly reddish aspect 5 diam. with few delicate soft rays as long or $1\frac{1}{2}$ times as long as diameter of body. Near it any relationship with the ovum like body above mentioned.

Gorycia, Pamphagus observed. Could detect no contractile vesicle.

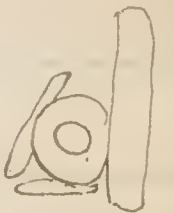
Trinema acinus, Individual seen with an internal ovum like body, covered with scales similar to that previously seen in Euphybia alvostata.

Euphypha alveolata. Frequent, very much abundant form. Small variety and spinelless, usually with two intermediate points to mouth. Often with an appearance of scales within around the pointing the nucleus. A fragment of a test clearly exhibited the constituent scales as oval $2 \text{ by } 1\frac{1}{2}$.

Diffugia acuminata  not infrequent, of crasse stones. Small form 25 long 13 broad & 8 at mouth

Diffugia pyriformis with green interior and built of crasse stones.

D. globularis with large diatoms attached.



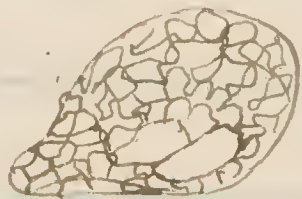
D. vulgaris. Oval 15 by 13 mouth 4 circular

pseudopods to 25 long by 1 wide.



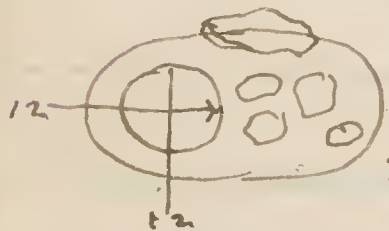
A smaller one 11 long 9 wide and 3 at circular mouth

D. marsupiformis




30 long 20 high

19 long at base mouth 12



30 by 20 = of large and small stones.


Arcella  Concavo-convex Discoid 28 broad 6 high mouth 3 high 11 broad. no tubercles around mouth. Appeared to have several nuclei and many contractile vesicles.

Another 25 broad 7 high - mouth 3 high 10 wide, no tubercles. Another 23 - 7 mouth 3 high 8 wide.

Euglypha globosa - Oval form

Amoeba radiosa

Amoeba resembling A. quadrilincata without
lines 12 by 8 cont. ves. 3. Ectosome advancing
the ectosome rolls in concert extending about
 $\frac{4}{5}$ length, & consists of fine granules with scattered
oil like globules. Nucleus not determined.

Amoeba. Linear like  25 by 10 in

front & 4 behind. nucleus 2, vacuoles 1 to 2
c.v. posteriorly to 3. With posterior minute villi
1 long & very persistent.

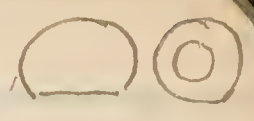
Amoeba quadrilincata? With a pair of lines only.

July 27th.

Euglypha alveolata. Two spineless individuals
observed, each closed with an operculum
and containing an ovum like body. The
oval ovum covered like the test itself. The
globular body within enclosed in a membrane,
had uniformly granular contents.

E. alveolata An empty test 18 by 9 and 5 at
mouth with 3 intermediate prints or apparently
eight in all. As in all others thus far observed
spineless. The second row of scales denticulate
like the first row.

Euglypha compressa, with lateral spines.

Diffugia globularis - Hemispherical form 
 yellowish granules and quartz particles 9 broad
 7 high - and 7 wide below (with $2\frac{1}{5}$).

July 28th.

Diffugia acuminata. Of coarse and fine stones
 58 long 25 broad near fundus, 18 at mouth:

Diffugia with six-lobed mouth

frequent. 30 long 25 broad mouth 10

Pseudopods three or more 30 or more long by 2 wide

Several individuals 33 long 28 wide mouth 12.

Diffugia with trilobate mouth

oval, large stones to mouth with

filled with small ones. 35 long 25 broad 10 at

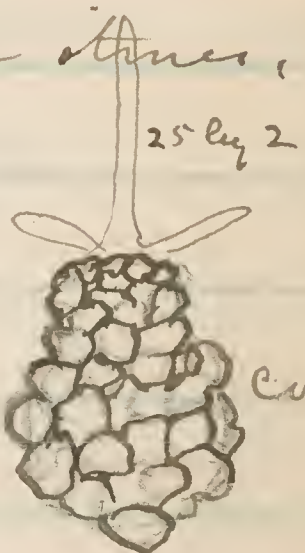
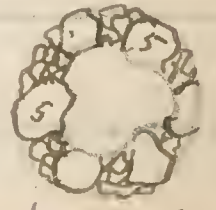
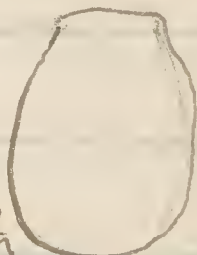
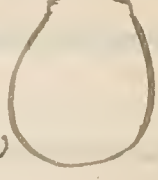
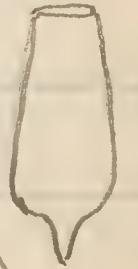
mouth. Lest of large and small stones, but
 surface rather even.

Diffugia pyriformis, of remarkably
 stones, thus three only across neck.

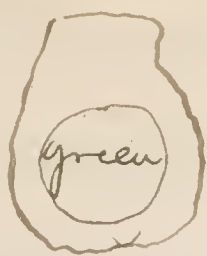
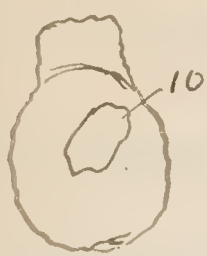
30 long 24 broad and 10 at mouth end. Stones 4 & 5.

Surface within fundus appears bright
 green

no 32-22-8. also of large stones



Diffugia subpyriformis. not uncommon



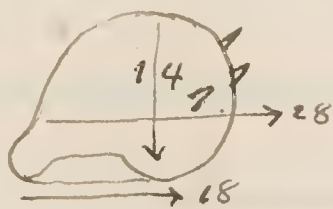
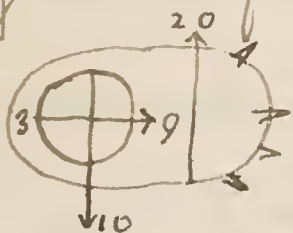
27 long 20 wide neck 4 long 11 wide

of coarse and finer stipes.

unsymmetrical.

Diffugia - of stipes and dirt.

28 long



Orange colored Heliozoon - See drawing of date.

Body 11, colorless under 1, ordinary rays length of diameter of body, projected over about $\frac{3}{4}$ periphery; from the other part projected sucker rays, 1 to 3 long - suckers about $\frac{1}{2}$ diam. Sucker rays moved in and out rather quickly and animal moved in opposite direction or in that of position of ordinary rays. Slight change of form of body from round to oval etc. Orange colored interior finely granular. No vacuoles or contractile vesicles observed. Ordinary rays few.

Actinophrys sol. Frequent, with large vacuoles, diatoms as food, etc.

An individual observed, see drawing, 14 diam rays to 15 numerous. Body finely granular with no visible vesicles or vacuoles. C.V. 5 at base 2 is high from surface before it collapsed.

A green heliozoan, like *Echinocypris*, but the rigid rays not furcate. See drawing.

Body 12 rays 7 numerous, green granules at h 1.

Another individual smaller with body 7 & rays about same.

A similar in structure seen, but devoid of the green granules. See over leaf.

Amoeba quadrilincata observed  10 by 6

The contractile vacuole 3 changing in form as usual in movement of animal.

July 29th

Actinophrys sol. See drawing. In state of dissolution. The drawing represents appearance when first observed, excepting that the nucleus was not so distinct. The animal was motionless and the vacuoles appeared almost stationary, but several appeared slowly to expand & become more prominent from the periphery. Only five rays could be detected in different foci. After an hour the whole thing including all the vacuoles had collapsed and shrivelled except the nucleus which then became very distinct & presented appearance seen in drawing. It appeared to contain a central

nucleus. The rays have also disappeared.

Body at first measured 20; the vacuoles from 4 to 7. The nucleus measured scant 6, the nucleolar shade or spot 2. The nucleus appeared uniformly granular. (No 75.H)



Leptophodeira - Usually with the pedrus more or less abruptly narrowed. The figure is the common form. Usually from 25 to 30 long 11 to 12 broad and mouth 5. Mostly yellowish, sometimes completely colorless.

Intestines test replete; mostly only partially filled. Vacuoles from 2 to 3 abundant towards the mouth.

White Echinogaster like Helicogaster with stiff but not punctate rays. See figure 7. July 29. Body 7 dir diam.

Actinosphrys sd 15, rays to 20, about a dozen on same plane, 1 to 2 wide at base, vacuoles 3 to 4 numerous, C.V. 4, food vacuole 5, granules about $\frac{1}{2}$

Difflugia with six lobed mouth, oval 30-25 with mouth 8, pseudopods three or more to 40 in length by 3 to 5 at base and 2 near end. Often with dark lined granules extending to end, elliptical & about 1 dir long. Common

Diffugia  of small & large stones & uneven outline  23-12, 7. acute at fundus, preapods to 35 in length by 3 at base & 2 farther on; also protruding in palmate manner.



July 30th *Diffugia*. Of the peculiar character observed first on 24th and seen a number of times since. The test is oval and has a slightly projecting quadrilobate mouth. Composed mostly of thin scales 4 to 6 long and 1 wide, with some, oval and angularly ovoid plates defined by interrupted or dotted outlines. The peculiar nature of these dotted outlines undetermined. Test has a short rim or neck 1 or 2 dir long. A specimen measured 28 long 22 broad and had the mouth 8 wide.

July 31st

Diffugia vulgaris. Oval 20 long, 17 broad, mouth with a rim or neck 1 long, mouth circular, 6 diam. brown edged, and of little stones, except occasionally where a large one extended to the edge. Another Oval *Diffugia* test 29-23-9 with a rim 1 long and the mouth circular but with a feeble trace of the six lobed character. Edge of the mouth brown, of small stones intermingled to large ones extending to the edge.

Cyphoderia and Linem a the only two forms
observed in the abundance of desmids and
dictyonas found on Ranunculus (white flower)
in swift stream of Smith's Fork.

Cyphoderia 28-10-4 nucleus C. fusca
obscure.

Diffugia acuminata of coarse and interesting
small stones  55-28-12 on large stone
attached to side  triangular was 12 long & 10
wide at base. Another 30-14-8, with the point 5-2.

Diffugia quadrilobostoma 30.22.9 Animal
yellowish. Pseudopods protruded a half
dozen at once from 20 to 30 in length
and two thick. Animal appeared yellowish
internally from the food.

August 1st. 1877

Cyphoderia. 30-12-5 with No 7
With pointed summit to test.

Replete, sarcode extending into half the point.
The vacuoles at free part are yellowish, some
with granular matter at center, others more
homogeneous. In this specimen the median
zone appeared opaque (opaque by transmitted light);
the posterior part whitish & finely granular but none of
the large darkly defined oil-like globules. Nucleus obscured from view.

Echinocystis like heliozoon 11 diam. long rays 7 to 8,
short ones 3, blunt but not pincate. A faintly
granular atmosphere at root of rays. Interior
of body with green and colorless grains about
1 div. diam. No 7 S.H. Appearance of surface of body
as if composed of lenticular elements, probably the bases
of the rays.

August 4th. Orange colored Heliozoon with
Polygonum, Hottentia. Spirostomum &c.

Body globular but changing to oval or ovoid
or somewhat irregularly rounded. The individual
of the drawing when globular measured 10 in
diameter but in moving over a filament
of Zygnuma it became irregularly ovoid and
measured 12 by 10. Moved actively. In motion
the sucker rays protruded & retracted. There
were numerous on the side opposite direction of
motion of the animal but were few on the opposite
side where the ordinary rays alone existed.

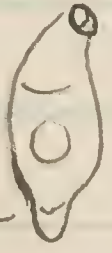
In course of observation the surface of body at
some point or other would well up or
rise in one or two ripple like processes. This would
occur from time to time and for a short period only.

The sucker rays protrude from any part of the


surface but were observed most numerous and actually moving opposite the direction of motion of the body, which slowly glided over the field.

Body granular, and orange colored, but with a superficial stratum about 1 div. thick colorless. No vacuoles, contractile vesicles, or distinct masses of food were observable within the body of the Heliozoan, nor could any trace of a nucleus be detected.

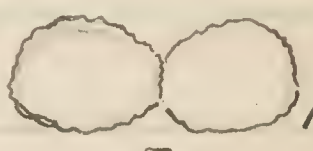
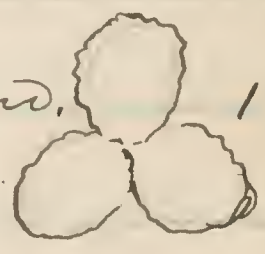
Difflugia with distinct and deeply trilobed mouth. Test rather even, of lustrous and intersecting small stones, nearly globular 24 by 23 + mouth 10. Length of the mouth 5 deep and 5 wide; points between sub acute or rounded. Edge of mouth brown.

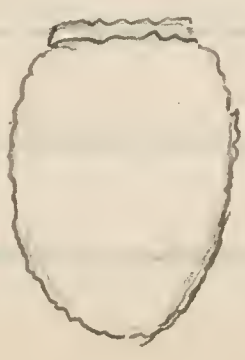
Cyphodiscia . The dark granules occupied about two thirds the extent of the sarcoderm, reaching to the very borders and completely obscuring much the portion of which distinguished only by some light being transmitted.

Arcella vulgaris. Hemispherical, even.

A. Eichhorni. 65 by 60 with 107. Rays few up to 25 long from surface of body. Superficial stratum of vesicles about 10 thick, on surface appeared to be about half that width. The rays appear to start from the bottom of the large stratum of vesicles. The animal contained a *Brachionus* a *Naniclea* 32 by 4 } another  15 by 3, also several small diatoms, two vacuoles globular 10 diam, and a half dozen smaller ones some with green matter as food.

Diffugia observed with a distinctly 5 lobed mouth. Was active and protruded half a dozen pseudopods. When first seen had mouth towards me & was difficult to make him retreat. Length of test 28 width 25, mouth 10 wide. Sarcoderm colorless. Edge of mouth brown.

Two oval *Diffugias* in conjugation.  16 by 14
Three do observed. Form of mouth unobserved.  15 by 13 each.

Diffugia  vase-like 40-30-14 neck 1 long.

August 5, 77. A green Heliozoan, abundant
or rather frequent in spring-pools, in which
grew Polygonum, Nottovia, Chara, Fontinalis;
etc. Body from 10 to 12 (No 7) usually about
11 with numerous delicate rigid rays up to 6
or 7, apparently blunt but not furcate, with
few ordinary rays double length of others. With
or without an atmosphere 1 thick of exceedingly
minute granules. Movement of animal
slow with slight modification of form occasion-
ally. Periphery of body colorless, apparently
composed of disks to which rays attached.
Interior of green globules which appear to
form a thick stratum upon a colorless
granular nucleus, as in certain focus
the centre appears colorless. See drawing
Green globules up to 1 div.

Amellae. Two large individuals observed in
same water as preceding, in which also
were many Lymnaea. The tests were
brown, measured 64 wide 22 high with mouth
22 & elevated about one third of height with No 7.
Surface of test quite even. See figure.


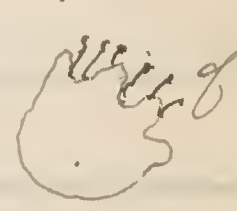

Amoeba sabulosa, *Pelomyxa*?

Wal, with a posterior circular disk which appeared at times in the faintest degree minutely villous, quite persistent. Animal quite sluggish in motion. Movement of a continuous slow rolling forward without protrusion of pseudopods or extension forward of clear ectosome; the granular ectosome with its band of coarse elements following so closely that it appeared as if the advancing motion was due to an imperceptible contraction from behind so that the whole appeared to roll on without much change of form. Movement accompanied at times with shortening and corresponding thickening. Contents of fine & coarse granules with multitudes of quartz particles, small diatoms, yellowish dirt &c. Generally no vacuoles could be perceived, and if nucleus & contractile vesicle existed they were completely obscured from view. Twice during observation a spherical granular body came into view which may have been a nucleus. Also in motion occasionally several vacuoles came into view. Size 42 long 25 wide and deep behind with N & S. H. See Drawing.

August 6, Orange colored Heliozoan. Lee drawing.

When first observed it was globular 19 div.
No 7. with sucker and ordinary rays all round,
the former 3 long the latter 5 long. Appearance of
a pale round or oval nucleus 7 div. Shortly
after protruded two short papilla like processes
of sarcode with globules like the globules or
suckers at the ends of rays. Shortly after
a broad process of sarcode protruded on
the opposite side. Subsequently the sucker
rays and animal became motionless &
the animal appeared slowly to undergo disso-
lution, gradually expanding to 24 div. the
clear and colorless border spreading so as
to obliterate or conceal the rays. The nucleus
became more shining, was circular, paler
tint than the orange colored sarcome &
measured 7 div. diameter. The structure
of the body with colored & uncolored portion
appeared to be a pale finely granular basis
with larger granules colored & uncolored and
clear globules up to 1 div. diam, resembling
the minute suckers like globules of the rays.
The colorless periphery of the body was
continuous with the protruded colorless

sarcode and appeared to be of the same constitution.

Later the changes above indicated appeared not to be the result of dissolution, as the body was observed again to contract to 22 diam. and become more active. It again protruded rays, and changed from the globular form by presenting several angular projections of the periphery, and again several papilla like processes of sarcode. The latter again withdrew, and from the former angular prominences small fasciculi  of shorter rays for a short time protruded, these were again withdrawn, the body became more even and from it were projected a number of ordinary rays. Having become involved in the dirt on shaking for some time the cover glass, the animal became more globular 20 dia. diam., with ordinary short rays quite numerous. Shortly after retracted most of the latter, became very irregular in form from angular extensions  of the colorless bodies on one side. These were again withdrawn and the same portion  became occupied by many shorter rays, or rather ordinary rays with

fine grains and some sarside along their length
as often observed on the rays of *Actinophrys*.

Then withdrawn the granular or sucker rays, became
oval 21 by 18, and glided along protruding all
round ordinary rays with no sucker rays.

These ordin. rays were longer, stouter and
fewer than those originally shown, & were
more numerous on the side in direction
of gliding motion of the animal. It once
more assumed nearly the original circular
form 18 diam with both kinds of rays, but
fewer, especially the sucker rays, which
projected from one fifth the periphery on the
side opposite the gliding motion of the
animal. As the animal moved on it
would from time to time slightly change its
shape, become flattened on one side, become
uniform, oval more or less angular &c. The
ordinary rays up to 7 elongate animal, would
sway from side to side, while the sucker rays
would be projected & as rapidly withdrawn.
In course of observation in several instances it
appeared as if the nucleus underwent some
change of form, from globular to oval and
even irregular. It finally was completely

obscured from view, and the interior orange colored cutaneous
appeared lighter and darker.

An apparent cast skin of the Echinocystis-like Heligom
with blunt spines: Spines or rays 7 long, apparently blunt
no appearance of furcation. The skin at the broken
edge appeared to be made up of a double contoured
interrupted line, apparently composed of conjoined
minute lenticular plates? perhaps the bases of the
spines. Apparently a few of these lenticular disks were
seen isolated, but it was not positively determined that
they pertained to the spines.

Diffusoria 16 long 13 broad, with a neck 1 long and 5 wide.

Mouth irregularly circular, following outline of the stoma.
Associated with multitudes of Diatomas, mostly a
sigmoid navicula $\int 40 \times 5$, from a pool connected
with Smith's Lake, in which grew Potamo.

August 11th. 1877 China Lake, Uintas, W. T.
Linnema acinus.


Euglypha alveolata, spineless variety

do do 26, 16, 7, with short spines, four or five.

to fundus only 2 long. Four intermediate serrate points
to mouth


Euglypha brownnea? colorless test, empty, 12, 9, 3.


Diffugia pyriformis: in considerable variety of size and shape, and in proportionate size of stones. The commonest form. One 50-40-15 coarse stones.

Dif. spiralis - of stones, not common. 32 long, 29 broad, 22 thick, neck 4 long mouth 8  -- partition 10 long. Also found in Nuphar pond.

Dif. marsupiformis. Several varieties.

See drawing of Aug. 12. Body of test covered with ditto particles and stones; the mouth part of diatoms &c.


Diffugia -  68-60; neck 40 wide, 9 long from level of mouth, width across rim 48 depth of reflection of do 4. Large stones in fundus of which several formed conspicuous projections, but no true processes.

Diffugia acuminata. The point generally an abrupt finger-like process, obtuse nearly thick in long, and in many specimens unsymmetrical or projecting from side: → 

The stones often crasser at intermediate part of test than at fundus.

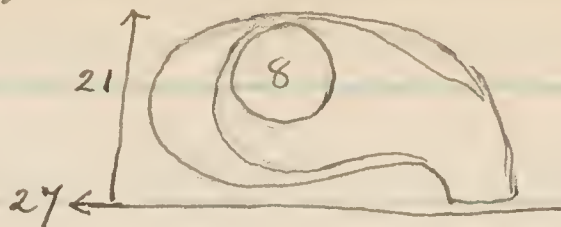
Schinopyxis. Considerable variety, with spines, and without spines.

Arcella discoides 25 broad mouth 8, height of test 8.

Arcella vulgaris 23 wide 13 high mouth 5. Cupped variety, three rows caps 5 wide. 

Cyphodonta - not infrequent, with obtuse furrows

30-17-5, nucleus 8.



Echinopyxis 50 linear 17 high. mouth 20
loaded with coarse stony at back
border. No spines. mouth with four sinuses edged
into lumen. Test raw silica.

Arceles. of extreme delicacy - See drawing Aug. 11.

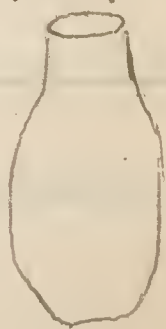
Another indiv. 15, mouth $2\frac{1}{2}$ sarcide diffused over 11.
apparent nucleus 2 enclosing a darker nucleus $1\frac{1}{2}$
several cont. ves. to 2.

Echinocyrtis viridis. 20 diam. Fusate rays
numerous, apparently of one kind only, i.e. the
longer ones, measuring about 12.

moving sometimes a large fasciculus of the
rays converged on one side. Ordinary rays few
up to 18 long. Cylindrical periphery $1\frac{1}{2}$ thick. Fine grains ranging
from $\frac{3}{4}$ to 1 in average about 1. A thin stratum of fine granules
lining the bottom of the rays.

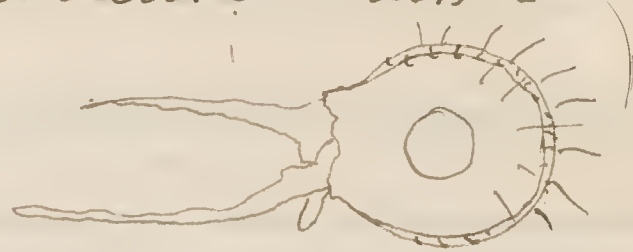
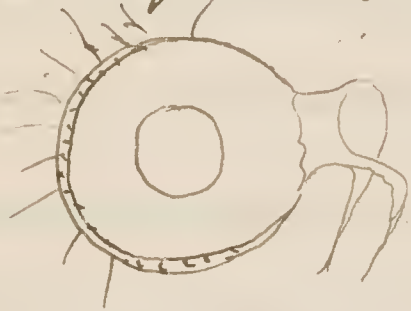
Nelchela! Empty test; compressed angularly pyriform
mouth elliptical. 30-17 by 12 + mouth 7 by 5.

Test with rounded polyhedral meshes of variable
size mingled with a few linear forms.



Amoeba gonialis. ordinary form.

Amphizonella vestita Test faint luminous, with
short stiff hairs. Body 10, nucleus 3 hairs 2
pseudopods up to 12



New genus et sp. Pseudopods filamentous as in Euglypha
and Cyphoderia. Test in form like that of Cyphoderia
but with two appendages one on each side of
fundus. Structure of test chitinous, yellowish, with
adherent sand particles, but with no evidence
of the structure in Cyphoderia or Acrella, but
appears to be like that of Echinopyxis. See drawing
August 13th. Chiass Lake water contains
Euglypha globosa. Living specimen. Test
globular. with neck 9 long, body 7 broad
neck $1\frac{1}{2}$ long mouth 3 wide.

Euglypha alveolata. Several specimens seen
with 5 and 6 divergent spines from fundus.

Nebula munita. A very characteristic test
observed. See drawing of date. Also several
others less well marked.

Acrella, discoid form. 30 wide 10 high, with
mouth 14 wide or nearly half width of test.
See drawing of date.

Pelomyxa - Oval 80 by 40 See drawing of date.
Transparent, colorless, replete with a granular
ectosome mingled with food or dirt consisting
of granules, quartz particles (up to 7 by 5 in size),
diatoms, fragments of desmids and of hyphom
leaves. Ectosome colored more or less with
brownish and green from the food like particles.
Movements of animal. Usually a slow regular
inward rolling motion, the ectosome following
closely in the advance of the ectosome.
Occasionally from the fore part, in front or
on either side there would be a rather
abrupt protrusion or advance of the ectosome
followed by advance of the ectosome as if on
the point of bursting. Generally in the
progress of the animal, from behind there
could be observed protruding the edge of an
apparent circular disk, striate and minutely
villous at the edge. Projecting from the edge
there could also be detected from time to time
cilia-like filaments, not vibratile, as rep-
resented in the drawing. Frequently the villous
disk was altogether absent. No vacuoles
were visible, nor at any time did a
contractile vesicle come into view. There

was also at no time any motion observable such as is often seen in an *Amoeba* from the collapse of a cent. vesicle. At times a strong light transmitted would show a clearer central spot as if dependent on the existence of a nucleus, but no other traces of this could be detected in the motions of the animal.

Would slowly roll onward without change from the oval form, or would assume form as represented in the drawing. In the former condition would exhibit no trace of the villous disk. Sometimes instead of the latter the back end would appear to be gradually resolved into a fine villous fringe. When disturbed and made to contract to nearly a globular form it measured about 55 diam. Shortly after it assumed an oval form 60 by 40 with a posterior circular villous disk about 10 diameter.

Diffugia with trilobed mouth, of stones



Amoeba nummata with unusually well defined neck. Test plate shaped. Areolae indistinct. See drawing of Aug. 14th.

August 14th. *Altiplanops Eichhorni*. Frequent
in China Lake. A fine vigorous individual.
See drawing. Globular 70 div. diam. Outer
stratum of vesicles 10 thick. Rays numerous
uniformly distributed - to 45 long beyond the
surface of the body. Outer vesicles 6 & 7 thick,
by 10 deep. Inner vesicles 3 to 5 diam. A
large cent. vesicle 17 by 13 but enlarged to 20 by
16 before collapsing. Animal contained six
large food vacuoles in interior 15 or more in
diameter, one measuring 20. These contained
large white granular food balls; one a vorticella
not yet dead; another from the jaws indicated a
rotifer; the others undetermined. A similar large
food vacuole occupied the outer stratum beside
a smaller one, both of which were subsequently
drain into the interior. The animal also con-
tained three large diatoms, a *Trinema*, and
other matter not determined. See drawing of late.

August 16th. Water from a small lake
at foot of Bridge Butte about 8 m. from Ft
Bridge obtained the previous day. Alive
with Cyclops, Daphnia, Cypris, & Coleps.
Also contained abundance of Euplexia some
species, besides Spirostomum. Many desmids

and diatoms. Of Rhizopods there was a great abundance of an Amoeba, and a vase-like Diffugia.

Amoebae often spherical, limaciform, palmate, stellate, with blunt digitiform pseudopods, few or many, often with a posterior villous process. Usually with one contractile vesicle. Amoebae absent or indeterminate from oil-like globules or food vacuoles. Body ~~was~~ sometimes with a fine granular exterior with some darkly defined ellipsoidal, crystalline granules, mostly more or less replete with food, consisting

of diatoms, desmids etc. Most of them contained several diatoms.  One of these without food, nettle-like measured 20 by 20. Another limaciform  bent on itself with several diatoms measured 33 by 12. Another palmate measured 30 by 15. One had a large diatom when first seen at right angles, see figure of date. A large one meas 30 by 20. with a pseudopod 15 by 3. Cent. ves. from 3 to 5. The vase-like Diffugia, very abundant & almost the exclusive one. = Obovoid, with the mouth at the lower end, and usually

Sketches from microscope 18th Nov.

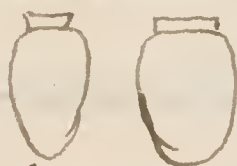
surrounded by a straight rim 1 or $1\frac{1}{2}$ long, occasionally
erect or short funnel like and 2 long. Mouth
round. Feet not infrequently same or less
asymmetrical, or oblique, or more prominent
on one side than the other. Small ones, not
frequent without rim to the mouth resembled
D. vulgaris - one of which was oval 20 long 17
broad with the circular mouth 7. A large
rimless one was 42 long 32 broad with the mouth
12. Another with short straight rim to mouth
was 50 long, 30 broad with the neck 1 long &
mouth 14. Another see figure: was 50 - 28, neck
erect 2 long 17 wide at edge. Feet constructed
of median sized spines & exterior comparatively
even.


China Lake, Aug. 16.


Actin. Eichhornii. An individual, actin. con-
taining two small diatoms, &c. Diam 30
rays many, uniformly distributed to 30 long.
Outer stratum of vesicles 7 thick. Rays punctate
to the inner vesicular mass which measured
about 15 diam (No 7).

Euglypha alveolata with eight short spines to
fundus not more than 2 div. long. a common form.
30-18-7. Three intermediate pts. to mouth.
Nucleus clear spot 7.

Aug. 21 *Cyphoderia*. A frequent form in China Lake. All from this locality seen had the fundus obtuse, while nearly all of those from Ft Bridge ponds & pools had the fundus more or less abruptly narrowed into a digit-like point. In a specimen from China Lake 30-13-4 the nucleus was unusually distinct & measured 7.

Diffugia. Bridge Butte pond (Lumber Pond) contained multitudes of an ovoid vase-like *Diffugia*  with a short neck or rim, usually straight, rarely excited, but they were all empty. 52-28 - neck 2 by 14. Body ovoid the narrowest pole forming the summit.


Diffugia pyriformis from China Lake 115-85-45 of course stones. living specimen: — 

Diffugia - pot-form, with least 70-60, at rim 42  at neck 35. Edge of rim thin, of minute stones. Surface of body uneven; of large stones.

Englypha compressa. China Lake. Hirsute variety. 18-10-4 by 18-5-3. Hirsute all over at 5 above the mouth. Hairs about 5 long.

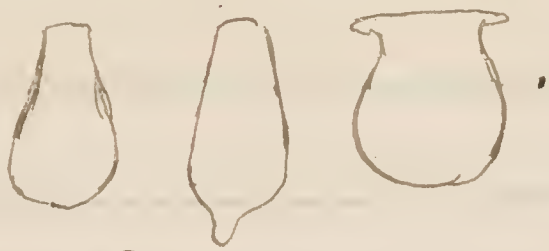
Aug. 23 China Lake water.

Observed two additional specimens of the new genus, one living, the other an empty test, of which see drawing of date. Test membranous, clay colored, granular, with adherent quartz grains smooth with a delicate, colorless, membranous lip reflected outwardly, and with an undulant edge. Individual 35 long 28 wide between points, 18 thick, mouth 7 with the reflected lip 10.

In same water Cyphoderia frequent. A three lobed smooth Diffugia was nearly globular 32 diameter with  mouth 10 between points of base and summit lines, the sinuses or lobes 5 deep & 5 wide. Test of stones, undulant, even.

Acrella vulgaris, cupped variety - See drawing. Diffugia of jet form with beautifully delicate reflected lip of fine sand particles; the body composed of large and moderate sized quartz grains. Another with erect lip but not reflected and somewhat pointed summit. See drawings of date. Outlines of one half.

The three common *Diffugia* of China Lake
are. *D. pyriformis*, *D. acuminata* and
D. pot-like



D. spiralis and *D. marsupiformis* less frequent.
Actinophrys Eichhorni and *Cyphoderia* also
common.

Euglypha alveolata with very short spines
moderately frequent.

Acella vulgaris, cupped variety most frequent
of this genus.

Echinopyxis, with & without spines & in
considerable variety, moderately frequent.

Philadelphia. September 20. 1877.

Dinamoeba. From Atco, N. J. Sep. 21.

Early in the morning observed a specimen
See drawing of date I. pyriform, apparently with
a half cell of Clitellum in body transversely
and projecting on left, with a large vacuole
20 diam, and other smaller ones contiguous.

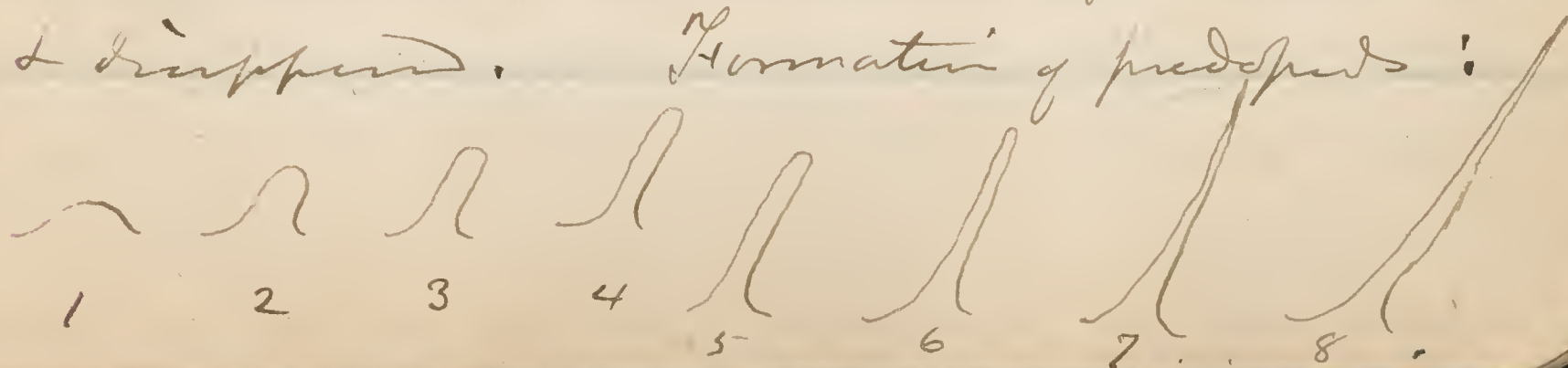
Length 45 width of body 35. Length Clitellum half
cell 52 by 5 at narrow end + 11 at broken end, Pseudo-
pods only from head of pear; no villous processes
behind. Spicules moderate in quantity. Thin
ectosome extended over the projecting part of
the Clitellum & this was also spiculate.

View second - an hour later II. Length 55 width 35
Clitellum longitudinal, showed to be doubled
the fore part shorter, colorless and shrivelled.
Large vacuole still present. Later III Outline
pyriform Clitellum oblique. A villous tail to right.
Food balls comp. few confined in this and previous
views in advance of the large vacuole. Two
small vacuoles in villous tail - 60 by 25.

Later IV Body huscint shaped, villous tail gone
55 long - 28 wide in front 25 behind - Pseudopods 10 to
30 in length. Later V. Discharge of fine granules

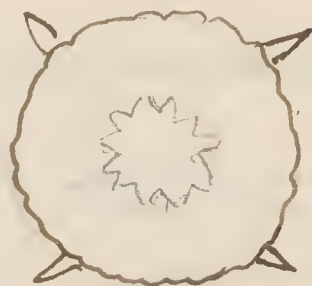
and ligured to left of tail end, & projection of
a pine shaped process 10 by 6 which gradually
became a pseudopod 20 long. The large vacuole
had disappeared & its place occupied by several
others of which largest measured 10 div. as seen
in VI. Latter part of afternoon as in VII 60
long 30 wide at fore part & transparent tail end.
even or without villous processes 25 long &
15 broad. A vacuole at end with green
excrement which was shortly after dis-
charged. Several similar masses descended
& one discharged in same manner. Tail
end formed of clear ectosarc. Contents of
animal though discharge of matters had
become more translucent & thus seem to
consist of molecular granules from a mean
point to $\frac{1}{2}$ to $1\frac{1}{2}$ the larger like fine
oil or aleurone globules; also many vacuoles
everywhere apparent from 1 to 4 or more in
size. Pseudopods to 25 & 30 long. Spicules
apparently everywhere absent or had
disappeared entirely. Several of the back
pseudopods with small rounded villi. In
the evening found that the animal had
discharged the Clutonium which lay.

next by: Animal as in VIII 55 by 25, with
 eight preopods 15 to 25 in front. Hood bulbs
 all at anterior third of body. The Clitellum
 Half cell 52-5-11- ~~pale~~ raw sienna color
 darker at the end. Endochrome forming a shirled
 knotted end; from open end projects the thin
 shirled edule. Other half about 30 long. Was
 this a Clitellum which had been swallowed
 just after the production of a new half cell?
 which was then delicate & edule. Appearance
 of animal next morning as in IX, viewed and
 drawn under Water 1/10 (All the other viewed as
 usual with the N.Y.S.N.) Under the 1/10 measured
 70 long indep. of the tail processes etc. Food discharge
 of food. Unusually transparent. Contents of
 vacuoles ranging from 2 to 10, and a molecular
 series of granules up to 1 in width, about 1. Hood
 bulbs few in front. The vacuoles sometimes
 measured appeared to under very low contraction
 or very low enlargement. The larger appeared slowly to
 disappear while small ones started into existence
 & gradually enlarged & in turn again contracted
 & disappeared. Formation of preopods:



Diffugia corona Lotus Pond, Woodstown, N.J. Sep. 22.

Comparatively even and globular 25 diam. Mouth
13 with eleven points and sinuses. Points acute &
brown, sinuses rounded 2 wide and deep. The 4
spines of the border, indep. of central one, could
be seen nearly equidistant
in the view from the mouth
measuring 3 and 4, thus.



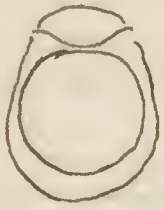
Acantho


An Echinocypris found with alve. With Wales 1/10
green globules 1 1/2 to 2; forked rays 20, distance of
forks about 1, dikes at base about 1 1/2. Body
fine green 35 diameter.

Sep. 24. Examination of Echinocypris from Sanford Pond
Maine. Test appears to have the same constitution
as in Arcella, but is generally more or less & sometimes
completely obscured from view by adherent sand grains
and diatoms, and in addition by the oaracle & its alveolae
and contents of diatoms etc. Constitution especially distinct
in the darker colored specimens, usually well marked
in the body but not discernable in the spines. These
latter generally have a columnar ~~trapezoid~~ print that
looks like putrins for the open end of minute prints
of oaracles.

Echinopyxis, of same form and constitution & color as the former, but without spines. Approaches closely in appearance the discoid form of *Arcella*. From this differs in ascending process of mouth and adhesion of numerous fine particles of sand. Lotus Pond - Woodstown N. J.

Arcella Sphaeria - Hammonton N. J. Sep. 27, 1877

Tut 34 long 28 broad. Sarcocoe forming a circular hall 23 diam, green globules within chiefly 2 diam. Opercle 7 thick.  breadth 16 of mouth do.

Another with it 26 long 19 wide, sarcocoe hall oval 21 long 17 wide green globules chiefly 2 diam. Opercle $3\frac{1}{2}$ thick mouth 11 wide. The sarcocoe hall & opercle nearly occupy the interior 

An empty test nearly by 8 in company with preceding was 37 long 28 wide with mouth 17 wide, area of test about 2 diam. - Near No 75. H.

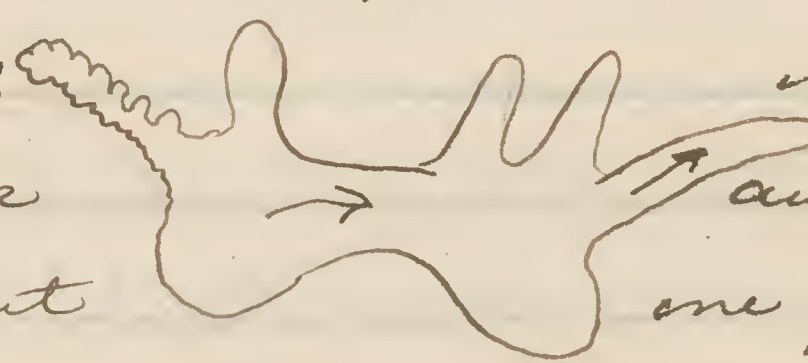

Nebela allied to former, loaded with stones at fundus and animal colorless - probably an undescribed species. Length of test including large stones at fundus 40 - without 34; breadth 20 mouth 15. its projection 3 - breadth of mass of stones 17 depth of larger ones 12. Sarcocoe mass 20 by 15; area of test 142.

A second of same kind with large stipes of
founder 42 long, 22 wide, mouth 14 wide. Then
found in water of Neamminton Pond. The
test as well as the sarcode colorless, except
from the food which consists of diatoms, desmids
etc. Meas. No 7 S.H. Sep. 27. 1877

A third represented in drawing of Sep. 28, as
viewed & measured under Water 100.

Mouth elliptical, with acute commissures.

Annela princeps. Woodstown Lotus pond, N.J.

A large specimen, when first seen covered a
space of 150 by 150 and appeared to be in state
of division. Thus:  with the
intestines 40 thick and 55 long
(with No 7 S.H.) but one flared again
into the other. In this, after observed as the
contents of a large pseudopod flared inwardly
it contracted and became shrivelled in
appearance with grape like appearance
of the surface. After remaining ten days
in live box, appeared quiet, forming an oval
mass with defined line 115 by 95 closely
covered with small globular pseudopods looking
like a layer of globules about 4 thick. These measured 3 & 4 in diameter and 

contained granules, together with an occasional crystal. (With No 4 measured 20 by 18) former measurements are with No 7.

Amulea princeps
with No 4.

35 long

(Fork 40 wide with No 7, larger branch 15 wide
lesser ones 15 thick. vacuoles & food balls 5 to 7.)

Another measured with No 4

was 30 long. 7 wide where thickest
with main branch 3 thick and smaller ones 2 thick.

Another measured 40 long with an expansion of 15,
anterior end 3 wide.

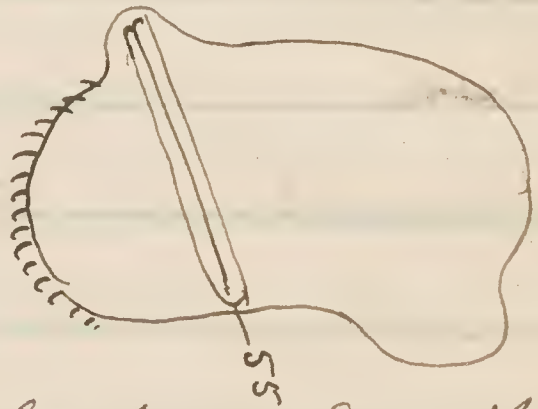
In a large specimen extending into two branches
one of them was 200 div. long the other 150 with
No 7 15 to 20 thick.

With No 10 Water a contractile vesicle in
tail end measured 20. The villus tail end
was 50 long 40 wide at base. The body in
advance was 50 wide. The villi measured
5 to 10 long. The octahedral crystals were 3
long by $1\frac{1}{2}$ wide. Oil like granules measured
up to 1 in diameter

Pelomyxa. From Hammonden pond, N.J.

Sep. 28, 1877. A large specimen oval, then reniform 75 by 50 by reflected light appeared cream colored with brownish and greenish spots and minute transparent villi peripherally.

Contained a deciduum doubled across causing a projection on the left and measuring 55 across. The peridium



was covered with clear ectosarc

with granular matter in axis about end of the

Decidium. See drawing.



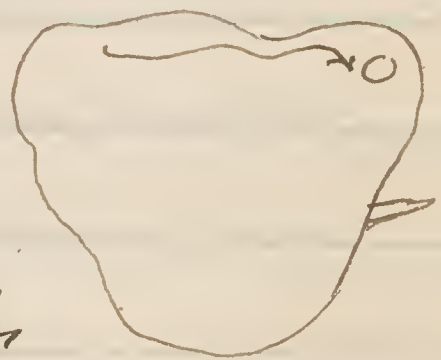
Afterwards measured 100

long by 37 in front & 40 behind. The short process with villi contained small vacuoles & granules.

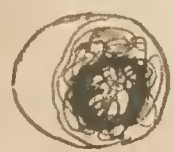
With No 7 S.H.

With $\frac{1}{10}$ Water the villi appeared linear & from 2 to 3 div. long.

In another view in which no villi were visible, appeared somewhat cordiform 60 by 60. As



ectosarc bulged to right or other position the ectosarc flowed in laterally, mainly of granules but occasionally with a visible vacuole. Once in a while a small conical pseudopod would appear. Next day appeared





like a spherical globule of transparent colorless ectosarc 50 diam. with a fine granular mass occupying more than $\frac{3}{5}$ ths. containing a clearer spot apparently a nucleus.

measuring 25. It also contained several vacuoles and few cells, all of them having been expelled.

From Spencer pond. Maine:


Actinophrys Sieckhorui 35 diam. The central mass
20 Rays to 25 long. The "red Acineta". *Diffugia* spines

Diffugia cirrus. *D. pyriformis*. *D. acuminata*

Acella vulgaris of several forms  

 *Euglypha alveolata*. *Echinopyxis* -

One test with eight spines. Curved discoid

Acella with large aperture - oval 66 by 62, mouth 32 by
28. Height of test about 20. Also polyhedral form .

Diffugia olla. Abundant in Hammonden

pond. A large specimen 85 long exclusive

of spines 75 broad. Neck expanding outwardly
with a narrow reflected rim of minute stones

58 wide, 50 wide above where begins to

enlarge in body. Neck composed of the

largest stones, most of them the depth

of the neck. Body of scattered larger &

intermediate smaller stones, none so large

as those of the neck. Seven short blunt

spines to pedicels each ending in a

single stone wider than the spine just below

it. Spines 8 long 5 thick at middle: - one

central, the others forming an 'irregular cir-

cles

(Meas. No 7 S.H.)

Diffugia Olla - 88 by 80. Neck & lip 10 long;
reflected lip 58 wide, neck 45 wide. Lip
blunt spines to fundus, ending each in a
single broader stone. Spines 10 by 5.
Animal colorless, pseudopods to half a
dozen or more. Seven seen at once
3 thick. Atco, N. J. Sep. 28, 1877.

Quadrula symmetrica with 1/10 Wales 27-15-5.

Large plates near fundus 4; near mouth 2.

Sphagnum Hammonia. Sep. 28, 1877

Euphypha brownnea, abundant Hammonia

Pelomyxa of Atco N. J. Sep. 29. An individual
observed 45 by 40 Oval, quiescent, with no
appearance of villi, perfectly even at the
border. Pelomyxa is readily seen with
the naked eye, looking as a white granule
among the other materials with which it is
found.

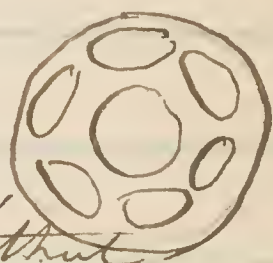
Amoeba princeps. Nolumbium Pond, Woodstown

N. J. Sep. 30. A large active individual in irregular palmate form, occupied space of 130 div in length and 90 in breadth. (See drawing of date) with pedipeds 10 to 15 thick. Cont. vesicle 9 or 8 to 10. No discoverable nucleus! Many food balls in axis, usually 3 to 6, some to 10 or even 15; globular, oval, irregular, straw colored, shining or oil-like, refracting granular, dark outlined. These mingled with many pale colorless vacuoles 3 to 4 div. Food not in vacuoles distinct from the granular masses. Observed a Brachionus? alive within the prot. end, in advance of Cont. Ves. This later was converted into an oval ball resembling the food balls above described. In movement, the body generally and also the large pedipeds present a longitudinal ridged, folded or fluted appearance. The axial contents of ectosome move as if in the interior of a thick walled cavity, of which walls composed of finer granular matter with scattered crystals, while moving parts of granules, vacuoles, crystals and food balls, Cont. Vesicle generally posterior but may also move with other matters. In movement, all axial contents do not move

together, some including food balls appear
to adhere to inner surface of extensor
tube but gradually become detached &
move one after another. As the posterior
part of body becomes exhausted of its contents
(axial contents) it contracts, shrivels, assumes
or continues its mulberry-like appearance
as this contracts and disappears the part
of body in advance assumes or continues
the same in appearance. At times
current pursues an opposite direction and
the tail end expands, radiates & becomes
the fore end, while part which was previous
in advance assumes the villous appearance.
At times in extreme contraction, after
the irradiation of a great multitude of
smaller pseudopods, the ~~pseudopod~~ body
especially at its hook part here assumes
a tessellated appearance from the mutual
pressure of the short pseudopods on one
another. Want of irritability often exhibited
in no contractile movements observed in con-
sequence of shock, or contact with an
Aquilule in active motion.

Arcella — ? Atco. N. J. Oct. 3. Sireal
observed. One with test 26 north 8 N 75 H.
had two nuclei 2 diam or with halo over 3.
had also eight c.v. at once measuring from 2
to 5 two at once reached 5 div.



Another had six gas? bubbles
thus: These gradually disappeared without
any apparent displacement.



In another observed three nuclei and from 9 to
a doz c.v. at once from 1 to 3 diam. usually
about 2.

Heliozoon from Atco, N. J. Oct. 3, 1877
Same previously seen in water from Broad Mt.

Sep. 12, 1876 Measurements with No 100 Nales.

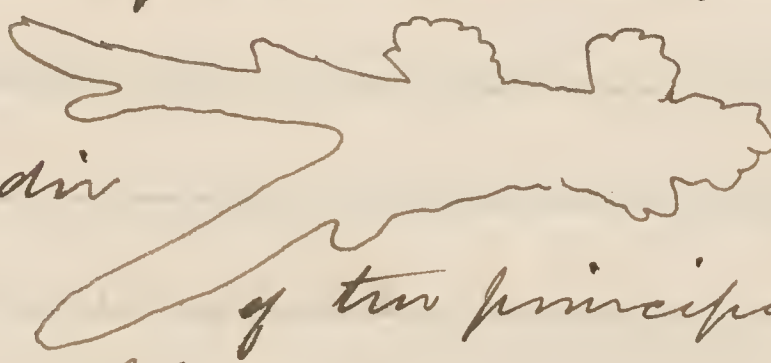
Animal presented a pinkish hue, was biscuit
shaped, or elongated oval & narrowed at middle
30 by 17  composed of an aggregation of
minute granules 2 div. pretty uniform with
a bright red granule (carmine color) within
about 1/2 div. Rays everywhere from 4 to 10
or more. Movement slowly sliding over
field slowly changing the form. As it
moved an apparent break occurred near
centre  through a thin layer of
the granules were seen & it made the

animal appear as if hollow & having the globules on the surface of a colorless central sarcoid matter. Some of the red prints within the constituent globules appeared brighter red than the others. Ray exceedingly delicate not radiating regularly, but in any direction from the surface. Some apparently branched

Amureba princeps. Woodstown, N.J. An active individual

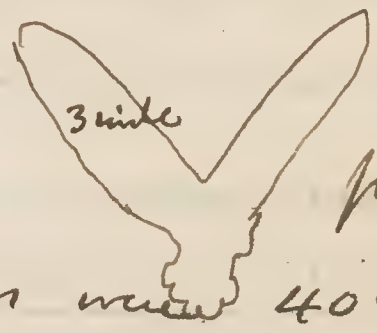
length of 160 div

The longest of two principal arms was 100 by 10 in thick.



occupied a width of 107

Afterwards viewed with No 4 presented a Y like appearance. The arms were 40 long and diverged 60. These diverged more and more until occupied nearly same line & measured 80 long by $2\frac{1}{2}$ & 2 wide. Supposed were going to separate, but the one div. afterwards flowed into other & creature assumed the ordinary palmate form.



Dinamvoker. Atco Water Oct. 6, 1877

viewed with $\frac{1}{10}$ Wale. As first seen Oval 80 by 50
white, with spots produced by cells of Didy. Sordid.
Predspuds as usual, but instead of the usual
bacteria-like cils had apparently attached minute
darkly defined globules or granules looking like oil molecules.
Undetermined whether on free surface or contained within minute
pores of ectosan. See drawing of Date. Predspuds few.
Animal sluggish. Border of body exhibited very minute
spines & granules as on the predspuds.

Clathromyxa on under side of Nymphaea leaves

Hammon Pond. N. J. Oct. 6, 1877 ($N^{\circ} \frac{1}{10}$ Wale)

No 1. Somewhat pyriform 21 by 19 brownish. Lattice holes about 2

bars between less than 1, rays exceedingly delicate to 15.

Test filled contents indeterminate. Rays involved
in a faint granular stratum at least about 2 thick

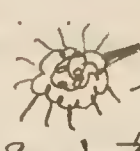
No 2 20 by 18 same form and appearance as No 1 except
rays not involved in granular layer at cost.

No 3. Spherical, 16 diam. colorless, lattice very pale, with

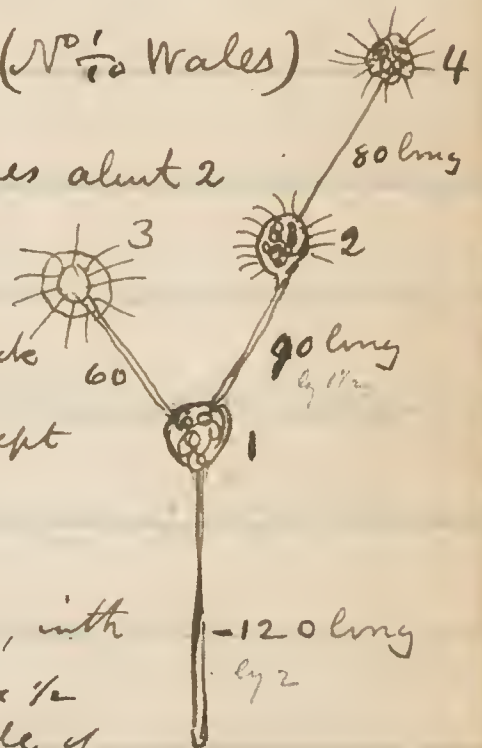
an interior mass 10 with globules from 1 to 2 & granules $\frac{1}{2}$

Rays extend from this central mass, & 12 outside of

the lattice work of the test, the lattice holes same size as in others.

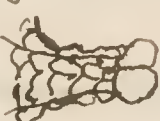
No 4. Apparently without test 12 diam.  simlberry like composed
of granules & globules the latter 1 to 2; the larger globules
look granular. Rays to 10. Apparently an internal central
nucleus about 4 but too indistinct to determine character.



The stems are double continued on each side & measure
2 thick. Delicate circle, outline of test afterwards discerned
& No 4 giving it a diameter of 15.

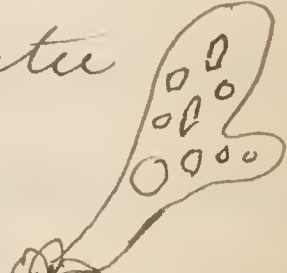


Arcella young. Oct. 5, 1877 Observed many minute Arcella in water from Atco. Mostly dark raw sienna or light burnt sienna color. Usually from 7 to 9 dia lined with 10 Wales. Generally the mouth not visible apparently obscured by the interior sarcule. Generally adherent to the cover glass, and could not be detached by shaking. The crested structure of the test quite distinct about $\frac{1}{2}$. Contractile vesicles usually two or three. Usually also a pale nucleus surrounded by clear halo in which see more decided color of the test, as is also the case through the C.V. The latter about 2 dia. Nucleus indep. of halo $1\frac{1}{4}$ to $1\frac{1}{2}$. Sarcule granular, with large granules cil-like & minute granular balls, probably food. Examples. One light burnt sienna, distinctly crested 8 diam. Cont. ves. to 3 in number 1 to 2 dia. Nucleus $1\frac{1}{4}$. Sarcule mass 5 dia. A second paler 7 diam. sarcule mass $4\frac{1}{2}$, one C.V. 2. Nucleus not detected. A 3d size of first but pale raw sienna, with two C.V. on one side & pale nucleus with halo on other. A fourth like the first. A fifth do but 9 dia & darker. A sixth, See figure, 9 diam. Cont. ves. on left dia. appeared & reappeared constantly, while what was supposed to be another view position of nucleus remained permanently, & therefore supposed to be a vesicle enclosing latter.

In another, apparently the mouth faintly seen as a circle
of 2 di. In another 8 di. See fig. with 3 c.v. and a
nucleus.

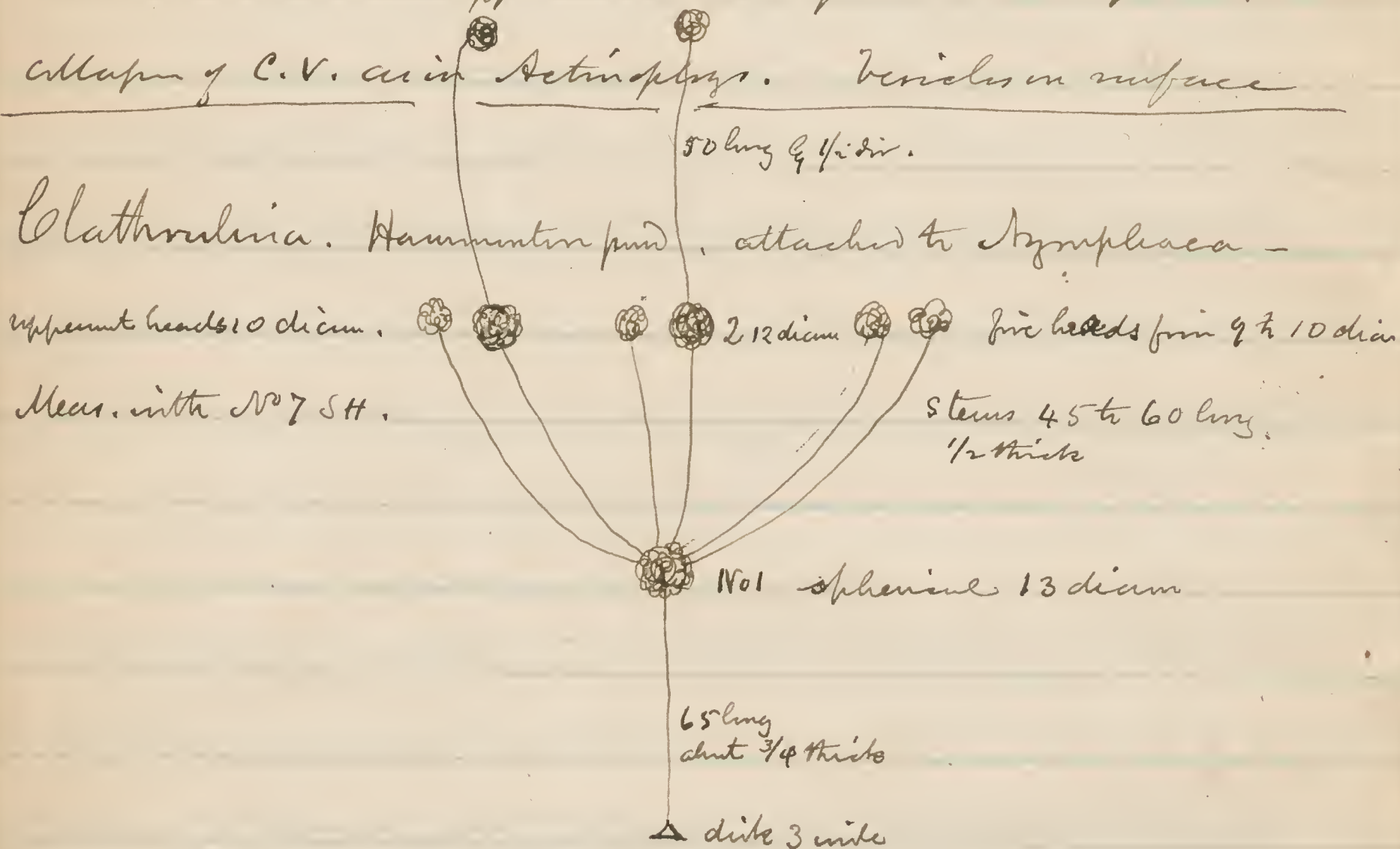
Diffugia olla - Atco. N. J. Oct. 6, 1897 A large
indiv. 90 by 80 with tentacles of funnels 10 long and
10 wide at base ending in one or two large stms
as wide as length. Thus  Pericardium 3 + 4 thick

Diffugia with feebly quadrilobate mouth thus: 
Test of stms, void  35 by 25.

Amurea princeps young. Atco water
20 by 6 (N^o 7) crystals 1 to 2 long
Contents granular, oil-like do crystals, minute  vacuoles
a c.v. to 3 diam. No nucleus detected.

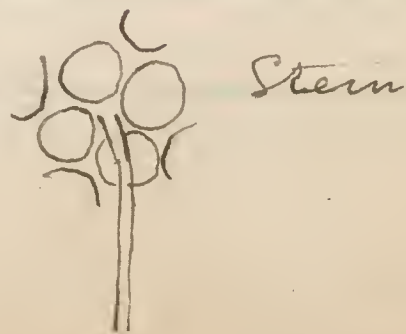
Clathrocladia. Oct. 7. Next morning the head N^o 4
was empty. Near eye was a pedunculate
Actinophrys like body, without discernible test:
Head 13 diam. rays to 15 ^{x 20} delicate, granular. Head granular
with glandules about 1 ^{to 1 1/2} diam. Stem 35 by 2 (N^o 10 Wales) End
of stem exhibited minute radiating lines upon the glass.
Whole colorless. Body apparently with a central faint
granular nucleus 2 in diameter. Head with irregular
mud-like outline with vesicles on surface up to 2 diameter
A few vesicles attached to rays - apparently animalcular food.



Head would slowly change its form, becoming more regularly spherical or the reverse. Vesicles would appear to slowly rise in the surface but remain a long time unchanged before they would disappear. Could detect no appearance and gradual development to collapse of C.V. as in Actinopterys. Vesicles on surface



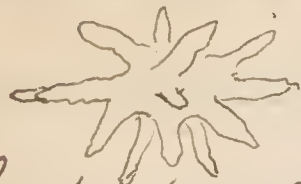
In some species of Clathrovaleria the creases of the test appear decidedly circular and oval in others more of a polyhedral character. In some also the main stem only 1 in thickness with $\frac{1}{10}$ Waler; in others twice the thickness.

A full grown empty test measured with $\frac{1}{10}$ Waler 17 diam, with circular holes $2\frac{1}{2}$ intervals $\frac{1}{2}$ or less, Stem 1 thick 110 long and dike 3 wide. attached in interval of four holes: →



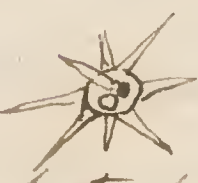
Heliozoon — ? An Actinophrys-like animal
Colorless, spherical, with exterior layer of disks and
delicate rigid rays, not furcate, but starting from minute
disks. Interior colorless fine granular contents with pale
granules. Glides slowly like Actinophrys, sometimes fasciculi
of the rays away towards one side. Slight change of form
from the sphere, from elevation of the center instant.
Meas. with $\frac{1}{10}$ W. Body 12 diam, rigid rays 10 long. Soft rays
few, culms invisible to 15 or even 20 long. While observing
the animal, saw coming into contact a quite moving
oval flagellate body 5 long. Suddenly lost its power,
& assumed a spherical form.  This was uniformly pale
& finely granular with a pinkish vacuole. This body
was drawn several times to the heliozoon and on often
pushed away beyond ends of rigid rays but retained by
several of the soft rays. As was pushed off it was shown
to have adherent two of the detached rays of the heliozoon.
In moments of drawing in and pushing out the heliozoon
twice became void from projection opposite the
apparent food ball but afterward assumed its original
form. Watching the Heliozoon swallow its food, the
ball was watched for several hours. After time a
globule appeared on one side & this elongated to 5 by two thus:
 showing it to be a germinating Zoospore. This continued
to grow and finally was abandoned by
the heliozoon.

Amoeba radiora Steen water. (tent 1/5) occupies



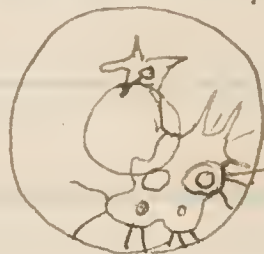
space of 40 by 20 in stellate form.

Contents: CV 4; granules with larger like oil particles and few minute vacuoles. No nucleus detected. No crystals.

A. radiora do. (1/10 Wales.) Body rounded 4. with eight pointed arms thus:  8 to 10 long 1 1/2 to 2 wide at base; CV. 2. Pale round spot probably a nucleus 1 1/2.

Amoeba. do (tent 1/5) 21 broad, mouth 7, bright orange sienna, areolae of test distinct 1/2

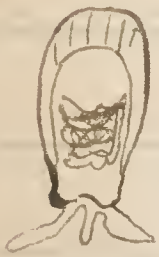
divided into two amoeboid masses:



Sarcodae

nucleus + halo 2

larger mass occupies space of 10 by 10 on right, smaller one mass of 5 with its projections.



Diffusion from under surface of *Symphraea* leaves

Hammonden. N. J. 18, 12, 7 Sarcodae within 3 of bottom



mouth deeply trilobate  scum 7. Protoplasts 1 to 1 1/2 wide.

Test dark sienna color, circular in transverse section.

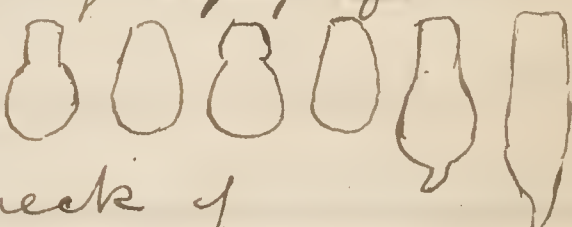
with an indistinct areolar structure. A lighter colored one.


measured 20, 12, 7, + sarcodae reaching within 4 of bottom.

A third seen of same kind. (Nº 7 SH)

Oct. 8. The Helizoon examined yesterday. Still in active condition. As it moves it occasionally raises part of the coat sometimes thus:  at other times thus:  in latter case assuming an oval position, the lifted portion forming narrow end of the form. Contents of fine granular matter with many globules from $\frac{1}{2}$ to $1\frac{1}{2}$, mostly about 1 (with $\frac{1}{100}$ W). In focusing for the centre this appears paler and to consist of a nucleus of fine granular matter without globules. Some of globules few in number as much as 2 perhaps found some detached rays exhibited disks at end scarcely 1 toward.

Another individual meas. 16 diam with soft rays extend even to 25 then granular & exceedingly delicate. The lenticular lines forming the coat appear to be distinct from the minute disks of the rays and are 2 or 3 times as long as wide.

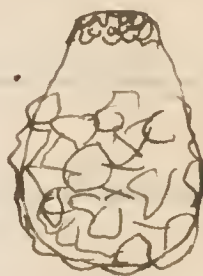
Oct. 13. In ditch water from Cranberry swamp Abrecon. Abundance of *Diffugia pyriformis* passing into *D. acuminata*  Also *D. spiralis*. One seen with neck of

pellets & body of stones. see drawing of date. also one covered with flat transparent plates of quartz and diatoms mostly separated by single row of small particles, as  seen in a trilobate *Diff.* in the winter.

Large balloon-like *Arcella* with cupped surface
Large *Euglypha alveolata* abundant.


Abrecom pond. Abundance of large *Diffugia*
pyriformis, of large stims, & very common, with sacule
seen through body of tent of grass green color.

Smaller stims near mouth 90-60-17 in the No 7




Trans. section circular, or 60 by 60.

Another more elongate form, of comparatively even
surface, and colorless sacule except such color
as derived from food, which usually appears yellowish

 65 long 26 broad, & 10 at mouth. Section circular

Are there two different species.

Large *Trinema acinus* and *T. globularis*.

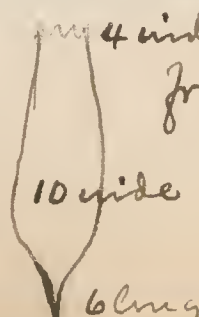
Euglypha alveolata. Form seen with six long divergent
spines to fundus thus:  as seen beneath.

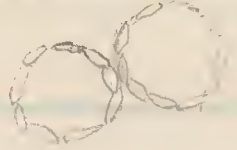
Arceia. house like form, eight sided &
shelving roof 47 high 45 wide, elevation of mouth 5,
22 broad where excited. mouth 16 crenate. crenations
about ~~twenty~~, not regular. Axialae of tent about 3/4

Oct. 17th *Nevela carinata* *Sphagnum*

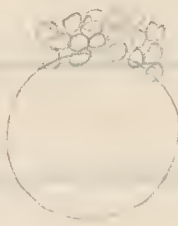
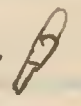
Abrecom to Wales = 65-42-12 lateral view 65, 18, 7.
Carina 5 deep extending to within 22 of mouth. Structure of
carina very indistinctly of minute axialae scarcely 1 diam.

Another from Abrecom pond. See drawing of date.
viewed in the No 75.H.

Euglypha.  frequent form in Abrecom *Sphagnum*
whole length 35 in the No 75.H.

A living *Leuconella* observed in association. Nucleus appeared uniformly granular. Abundance of *Trinema acinus* and *T. globularis*. A test of former with circular areolae having beaded outlines, in some cases where separate these beaded outlines appeared independent of one another thus: 

An apparent nucleus seen in decaying sarcocoe of *Euglypha spinosa*, 5 diam with 1000 Wates, uniformly granular.

Hyalolampe  Abundant pond water 100 Wates 21 div, interior body well defined 16 diam. Rings of extr. stratum 1 diam. The layer about 2% thick. Interior pale straw color with much brownish food & clear granules. Among food were three brown spores thus:  Animal slowly glided along, but failed to detect rays if such existed.

Saw several *Dif. spiralis* built of thin plates partly stroms & partly diatoms? with narrow interrupted intervals. Interruptions apparently produced by rounded clear granules.

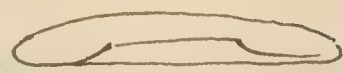
Actinophrys viridis. Alacum Pond water
Oct. 18. Body bright green, finely granular
green with darker green balls or spots;
28 diam. Rays moderate in number, granular
to 40 in length. Two cont. ves. about 6 diam.
Body so opaque that it appeared finely granular
yellowish green throughout to its very border
with darker scattered green spots. (No 7 S.H.)

Achela carinata viewed under $\frac{1}{10}$ Wales. The
rete in one focus appears as a black line or
set of lines with round or oval or other formed
meshes shaded centrally; in another focus
as light lines with the meshes polygonally
round or and the borders shaded.

Saw a *Trinema acinus*, dark sienna colored.

Euphypha spinosa. Appeared to have a
pale faintly granular nucleus 10 diam.
with nucleolus 2 diam. On or within the
nucleus were three other similar pale
spots observable, whether nucleoli or
external vesicles undetermined.

Arcella discoid Steo, N.J.

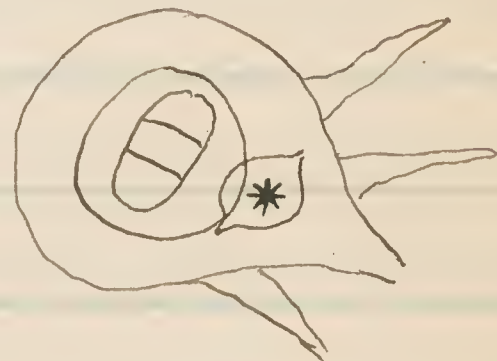


Breadth 42 height 9 elevation of mouth 3 width do 16

Arcella radica, occupying space of 30 by 30

contained three joints of *Didymoprium Grevillii* in a vacuole or else surrounded by slender mass of the usual gelatinous investment:

The vacuole 17 by 15. The three alga joints fresh & green 15 by 8.



An isolated joint of the *Dis*, not enclosed in a vacuole meas. 9 dia & endochrome reduced to center of ~~an~~ small olive brownish star 5 diam. This joint was shortly after observation discharged. Other contents consisted of a number of small greenish & brownish food balls: about 3 diam. Also colorless granular foodballs? same size. Four or five c.v.s. amount 2 or one, from 2 to 5 diam.



40 long. No 7 S.H.

1878 Jan. 5. Water with Cresses from Darby Station
Spring, collected Dec. 1877.

A fine large Amoeba quadrilobata. Another with blines,
A perfectly colorless Arcella, with two nuclei, opposite
and at periphery, hemispherical 20 broad, 16 thick, (10W)
have not produced, with 5 elevations. Some colorless,
C.V 2 to 2 1/2. Some oval 15 resting on
funnel of mouth, attached by threads to periphery of shell.
Lima-like Amoeba 30 long 8 wide posterior snout 3
to which large mass dirt adhered a cont vesicle enlarged
from 3 to 4. Contained two elevations 7 long also a number
of crystals, apparently starch grains and nucleolar matter



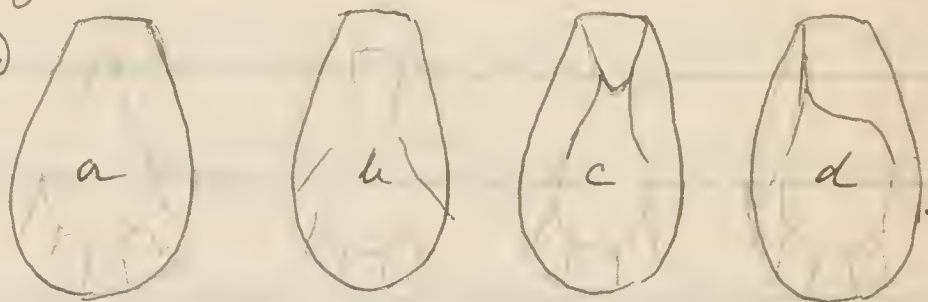
changes of form. (Mean 1010W)

Supposed to be young of A. proteus.   crystals

elongated to 35 by 8 at end. Snout not distinctly villous.
A nucleus 2 or with halo 4 div. At times two cont vesicles to 4
Associated with former saw an Ostracodella testali-
canda for which see drawing. With these also many
small Amoebae of various forms. Also Trinema of
several varieties, some unsymmetrical forms. Also
Amphizonella, the double contour not visibly dotted.

See succeeding page but one of March 31.

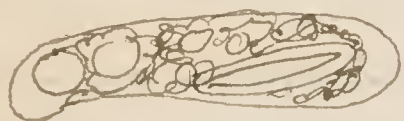
Jan. 12 *Hyalospheria cuneata*. In water
from Darby station spring. See drawing of date
Sarcule was rare form, on disturbance detached
itself from mouth and




retracted as in a, then
slowly protruded again
indrawing at end as in b. Projected one and two
pseudopods, after disturbance retracted as in c
retaining connection with mouth by two threads, after-
ward retracted one thread remaining connected
by one only as in d. Nucleus 5, with five
pale nucleoli of which three measured $1\frac{1}{2}$ the
others 1. Contractile vesicles two or three, close
to nucleus and just below it laterally; expanded
to three before collapse - all movements exceedingly
protracted. Coarser oil like molecules just below
nucleus, some of intermediate size seen along
border of fundus. Length of test 26 long 20 broad, 6 thick
5 broad at mouth. In section poles appear prolonged
as in figure. Sarcule in this view appeared pale
yellowish. Nucleus appears faintly granular
and like the nucleoli.

Jan. 16, 1878 Water Darby Station. Meas. No 7 S.H.

Small Amoebeae clavate or limaciform.
Movement with thicker end forward by
projection of the ectosome with attendant but
retarded influx of the endosome.
Movement to one side or other by projection
of ectosome in corresponding direction.



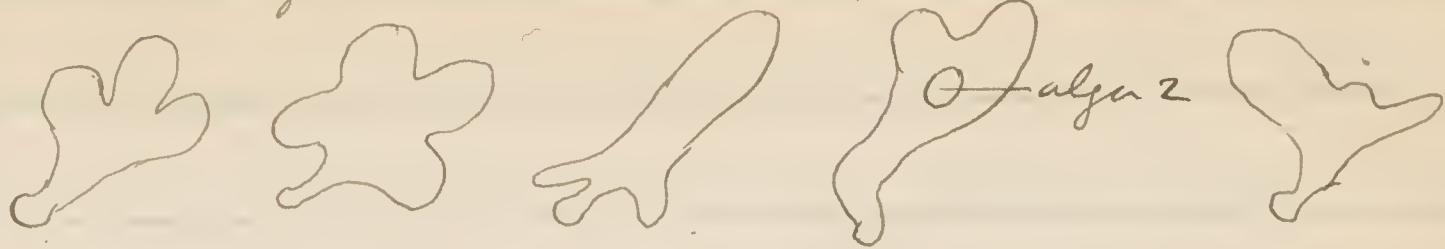
One 20 long 7 broad, contained a
diatome $8\frac{1}{2} \times 2$ with three interior endochrome masses
enclosed in an elliptical vacuole thus: 
Cont. vesicle 2 Nucleus $1\frac{1}{2}$ not readily distinguishable
from the granular spheres with it.

March 31, 1878

Same water as above. Meas. No 10 Wales.

The small limaciform Amoebeae with
posterior villous disk. Sarcide finely granular.
From one to three contractile vesicles, about 1 dia.
sometimes all in the villous disk, often absent for
a time. Nucleus not present or at least not detected.
All contained crystals, which generally held in
advanced position, often accumulated at fore
part, rarely contained Protococcus, though
abundance of them about, nor did anything
adhere to the villous disk. Nucleus from
20 to 35 long 6, 7, 8, wide at fore part, disk 3 or 4 diam.
Crystals $\frac{1}{2}$ to $1\frac{1}{2}$ long. a large one $1\frac{1}{2}$ long 1 broad $\frac{3}{4}$ thick

Some appeared as square octahedrons, others as hexagonal plates.




These Amebae appeared but little disposed to eat; they passed & repassed the *Pistococci* without noticing them. Occasionally an individual was seen with one in the interior green or reddish. Sometimes assumed an irregular radiate form.

June 15, 1878. Tuft of moss from bricks in my yard, moistened and immediately examined. No 10 Wales Is.

Trinema acinus abundant

Euglypha alveolata. minute, no spines, six points to mouth, areolae of test not obvious or indistinct, animal mouth, retracted, nucleus with nucleolus generally distinct, sometimes divided up into a uniformly granular mass. Surrounded by light oil-like molecules. 8 to 10 long 5 wide 3 at mouth.


Nucleus 2^h nucleolus 1. In one in which the nucleus was granular the nucleolus still remained distinct thus 

Diffugia cases

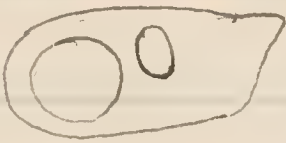
Ameba quadrilincata

Ameba. minute, with a posterior duct.

Two *Ameba verrucosa* 30 & 25. At first seen completely motionless & with no pulsating vesicle, several food vacuoles & patches of food. Nucleus oval 8 by 5. Saw others with c.v. Remained quiescent for several hours without motion. In all the



the nucleus appeared oval, granular, with more distinct and uniform granules just within the periphery, thus section appeared thus: 




One of the indiv. of quadrate form next morning was more oval and meas. (with No 75H) 20×18 the nucleus 5×3 , and a C.V. near it 5. Completely quiescent and during examination saw no change in size of the pulsating vesicle.

One of rather oval form next morning was 28×15 . The nucleus 6×4 . The contr. vesicle to which after 15 minutes had expanded to 10 

Am *A. verrucosa* seen June 16th - also quiescent & no C.V. measured 16×16 - with No 7 - irregularly quadrate. The C.V. appeared slightly enlarged to 5 & then collapsed. Another slightly enlarged from 1. The C.V. appeared and collapsed in a group of 3 or 4 which joined successively into one another.

A little *Trinema* with mouth almost terminal thus $5 \times 2\frac{1}{2}$ oval and $1\frac{1}{2}$ mouth, 1 inversion of do!


The little *Egghus* from the yard with Epith to mouth often appear as if covered with minute rectangular plates as in Shunk's *D. Shannoniensis* etc.   No 7 9-5-4
Appear to exhibit 6 largest ones of plates, with a 10th inv. could not make out the form.

Trinema 9×4 (with Waler No 10) exhibited 2 p.v. about 1 div. at side of nucleus. One 13-7-3 thus  plates at side of nucleus. One seen 13-7-3 No 10 W with nucleus 3 and was compressed thus:  7×5 . Nucleus with five nucleoli thus: .

Diffugia caesi of the mass of pavements, frequently
of a decidedly yellow ferruginous hue. Abundant.

June 24, 1898 Scum of *Euglena sanguinea* & viridis
collected from surface of inundated bog on Sch. R.
below Fort. Garden previous day Sunday June 23.

Contained a profusion of *Arcella vulgaris*, all
shades from light amber yellow to dark
chocolate brown. Usually 2 nuclei opposite.

a number of p.v., often air bubbles. Pseudopods
up to 14 or more protruded at same time beyond
lateral borders, 5 seen at once in all directions
thus , often pointed, variable in length
& thickness. Meas. with $\frac{1}{5}$ W.

18 toward mouth 5 dark brown, an air bubble 8

17 " " 5 " "

18 " light dark amber. 5 ps. to 10 long

11 " 4 brown

10 " 4

16 " 4

16 " bright yellow amber with obscure

17 " 5 do do do

Nucleus with halo 2 without 1. puls. res. 2 diameter

10 wide mouth 4 light yellow

16 wide " 5 brown


16 colorless - faintly discerned

From perfectly colorless, through all tints of raw sienna
or amber colored to deep chocolate brown, and
10 in breadth to 18 in breadth with mouth from 4 to 5
& rarely 6, nearly hemispherical, even, about half
the height of breadth, border of lower usually
somewhat everted. Nuclei 2, pulsating vesicles
3 to $\frac{1}{2}$ a doz. Nucleus 3 div. with halo 4. p.v. to
3 or 4 diam. Food contents, often from the contents
of *Euglenia sanguinea*, especially starch-like or
oil-like corpuscles, colorless & shining, also green
and red granules. Occasionally a ball counting
an entire *Euglenia viridis* would oval in form,
Pseudopods from 5 to 10 beyond outline; sometimes as
many as 14 counted - digitiform, often tapering
& even filamentous toward end; usually simple
occasionally fuscate near base.

Shell circular in outline, rarely lunate shaped or
trilobate.

Surrounding Arcella only 10 diam. with a digitiform

pseudopod 15 $\frac{1}{2}$ protruded thus

 shape on side 5 high.

A colorless one 16 diam. full of green algaous
food; the algaous grains being from $\frac{1}{2}$ to 1 diam.

Shell generally about half height of breadth or a
little less.



A number of the Acellae contained between the
protoplasmic mass and the sides of the shell 2 or 3
to ~~many~~ a dozen or more oval or elongate oval contractile
granular, ameboid cupuncles from 2 to 3 long by $1\frac{1}{2}$ to 1 broad,
when round about 2 diam. Are they parasites, or reproduction
bodies. There present in very many of the Acellae
Amoeba verrucosa & its *A. quadrilincata* very abundant with
Ocellularia, on mud of Zool. Garden bog.

Minute green Actinophrys 7 diam with 10 W. contractile
chaper from, rays about equal to diam. of body, ungranular
Another colorless 5 diam. two p.v. opposite. rays the
same length diam. of body. Abundant with *Hydrodictyon*.

In moss from yard. See drawings of June 22d 1898
Met repeatedly with animal consisting of four oval-like
bodies associated together. more or less disk like in one
view. Each body oval, uniformly granular, colorless,
with a pulsating vesicle. Nucleus probably existing
& central though not positively determined. When first seen.

The granular oval-like masses, slowly reticulated, but
finally become sinuous, & the puls. ves. ceased
its action or became exceedingly slow. One
body preserved in an. cage next morning was not
to be found, but found several acineta which
were supposed to have been derived from it.

Aug. 18, 1878. Small Ephyra and Loricata, in great abundance in moss from yard.



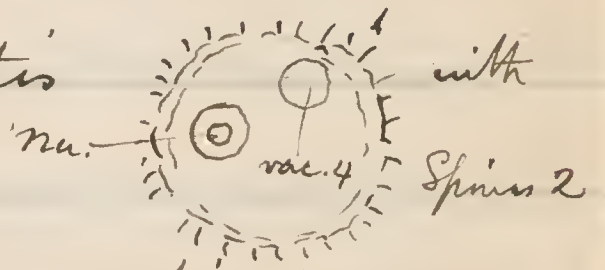
Two Loricata seen in conjunction thus:

Both distended with contents

Diffugia cassis, variable in proportion of length to breadth, sometimes uniformly constricted, sometimes broadened with heavier struts at junctions, sometimes around the mouth. Usually of a yellow color.

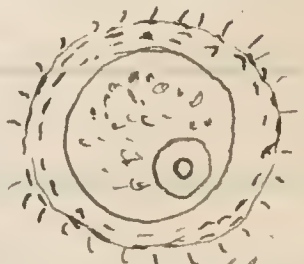
Aug. 24, 1878 With Spirogyra from the fountain in the garden at Fairmount. Echinocystis

short nail-like spines. 110W. 15 diam.



Nucleus? 4 nucleolus $1\frac{1}{4}$. Colorless; motionless; no soft rays.

2 Another 17 diam. with an inner ball 12 a nucleus as in former, with colorless ringed with a few greenish granules.



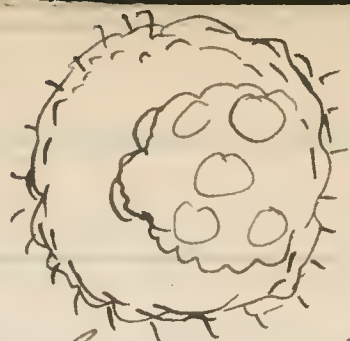
3 A third: 16 diam. like first. nucleus only 3 with nucleolus $1\frac{1}{4}$

4 A fourth same as the second 15 diam with inner ball 10. nucleus 4, a vacuole 4. No green col. in the ball.

5 Another 14 diam, like the preceding with inner ball 8 by $7\frac{1}{2}$, nucleus 3. granules colorless, a vacuole 3

6 One of 16 with an inner irregularly spherical mass resembling body of Actinophrys, which slowly changed form. Contained a number of vacuoles, of which several

appeared to originate & collapse on the surface. Shortly after first seen



the inner ball became regularly smooth and prominent when it appeared as in those.

Another 13 diam with inner ball of 8, nucleus 3.

Sat. June 7, 1879 Anchoir of general purplish hue. Sphagnuni. Malaya Cedar Swamp.

Spheroidal or ovoidal, stationary, very sluggish, usually emitting from one pole mostly three pseudopods, digitate, blunt or pointed, often irregular. Nearly opaque from the purplish black or ink hue. Has a decided purple color which appears to depend on the dark purple granules of the endosarc.

The marginal ectosarc transparent probably colorless but appears to have a pale violet tint, probably due to reflection from the purple granules of the endosarc.

The granules of the latter extend into roots of pseudopods to $\frac{1}{3}$ or $\frac{1}{2}$ their length. The body contains spheres &c

& materials of a pale brownish hue probably food.

but the purple granules render all else obscure. Could detect neither nucleus or cent. vesicle.

Size diameter 20 without pseudopods & nearly spheroidal as in (c)

20 & 18 with three pseudopods as in fig. 2 - 24-18 as in fig. 6

20-18 fig. d. with $10\frac{1}{5}$ L.

1885

Aug. 15 Trip to Newport, R. I. to visit Dr. Wm. Pepper. To New York & thence by Newport boat arrive Aug. 16th 7 A.M.

Same day drive 5 m. up the coast & take sail boat 5 m. to 'West Island', resort of a fishing club. Guest of Dr. S. W. Mitchell. Island of red granulyte. Return to Newport 17th. In company with Dr. P. visit A. Agassiz's laboratory.

Aug. 18 Dinner comp. with Prof. Gibbs, Jr. Wharton, Col. Waring. In evening meet Baron Osten Sacken. Aug. 19 Visit

Mr. Jos Wharton on Conanicut Island. Evening 9 p.m.

leave in Newport boat for New York & arrive Aug 20 7 a.m.

Take horse car on Broadway to 14th St. to Tiffany & Co.

Large collection diamond crystals. Kunz's sugar-like meteorite.

Take elevated rail 'Harlem train', 14th st station and

6th av. to 81st for Natural history Museum. Return

from 81st station 9th av to Courtlandt St. for home, leave

New York at 12 o'clock. 'Dr. W. Pepper 15 Greenwich Place.'

In a brook at Newport near place of leaving for West Island

observed numerous *Planaria maculata*, *Prostyla fluvialis*,

Clepsine, *Cardis* 3 species, the curious oniscus-like larva

of the beetle 'Psephenus'.

Prostyla 6 to 8 lines, milk white with brown intestine or sometimes nearly colorless.

Planaria maculata, mottly uniform chocolate brown above and translucent dusky whitish beneath. With a colorless spot at base of the auricle



1885

May 23. With family removed to Wallingford.

June 8th Trip to Cambridge, Md, in company with Dr. Rothrock, & Dr. Leavitt, examined a tertiary clay and sand deposit filled with shell casts, barnacles & mollusks. Horizontal beds exposed on shore of Bay. Returned June 9th.

June 10th. Commenced Annual examination Swarthmore. Evening dined with C. E. Smith, Dr. Leavitt in company.

June 16th Commencement Swarthmore College.

June 20th On invitation of Joseph Wharton. Trip to the Zinc mines of Friedensville, and the Steel & Zinc Works of Bethlehem; in latter case of Surrey Co. N. J. alone used in making zinc oxide & metallic zinc. Swarms of the 17 year Cicada in vicinity of Bethlehem. Scarcely any at Wallingford.

June 25th Trip on invitation of Dr. Hall, in company with other physicians to visit Surrey Cottage, Branch of Frankford Asylum, at Atlantic City. In company Dr. Darrach, Hinkle, Leavitt, &c.

June 26th Visit to Millers at Glenfield, Mead, where the 17 year Cicada swarmed, while there were very few at Wallingford.

June 27th Examination of egg deposits of Cicada. Found the deposit eggs only in the stems of the

preceding year. Eggs arranged obliquely OOOO in two rows in the receptacle of the woody tissue. In two receptacles of same stem counted in each 16 eggs. In another stem in one receptacle 14 eggs. In one of a cherry stem 24 eggs.

In ovipositing the instrument introduced in the stem obliquely downward through the bark into the wood to the depth of about half an inch. The passage is somewhat curved the instrument part being merely or quite vertically. In making the receptacle the woody fibres are split apart

entirely, thus:
fusiform



The receptacle for the eggs being & about 3 to 4 lines long.

The oviposition takes place both downward & upward,


not steeper in the former direction.

The eggs laid close together, but separated laterally by elements of wood tissue.

Observed a number of Cicadas, alive and clinging to stems, entirely deprived of their abdomens.

On the ground everywhere at Idleveld and also Southleham observed among the dead & mutilated Cicadas multitudes of isolated abdomens & Birds appear to eat the thorax and head of the males & reject the empty abdomen, appearing full air only.

1887 April 29 collected some bank fragments of pine
with *Proctosorus viridis*, at Gloucester, N. J. Placed in
a glass on the table. May 24th noticed on the same
about 10 larvae of a *Proctos*, which had apparently
hatched from eggs on the bank. May 29th Same
observed in imago state, & preserved in alcohol.

May 28th Received from Mr. P. Seal a few oz. phial
with numerous Rotifers. Transparent, whitish, with
yellow stomach. Conical, vase like, single eyed.
from 0.375 mm to 0.5 mm long with a dorsal and
ventral conical prominence. Occasionally retracted
the crown and protruded a pair of lateral cones
when animal was as broad as long. 
viviparous. Observed one give birth to
a young like the parent and two third as large.
Probably *Asplanchna Ebbesbornii*, Hudson.
Ann. Roy. Mic. Soc. VII 1883, 621, Pl. IX, X.
Received a letter from Mr. Hudson Aug. 4, 1887.
declaring the above to be new species.

June 3, 1887 A peculiar looking *Taenia* submitted
by Surgeon Poston H. Bailhache, U.S. M. H. S.

4545 McKean Av. Discharged by Robt Houtchinson.

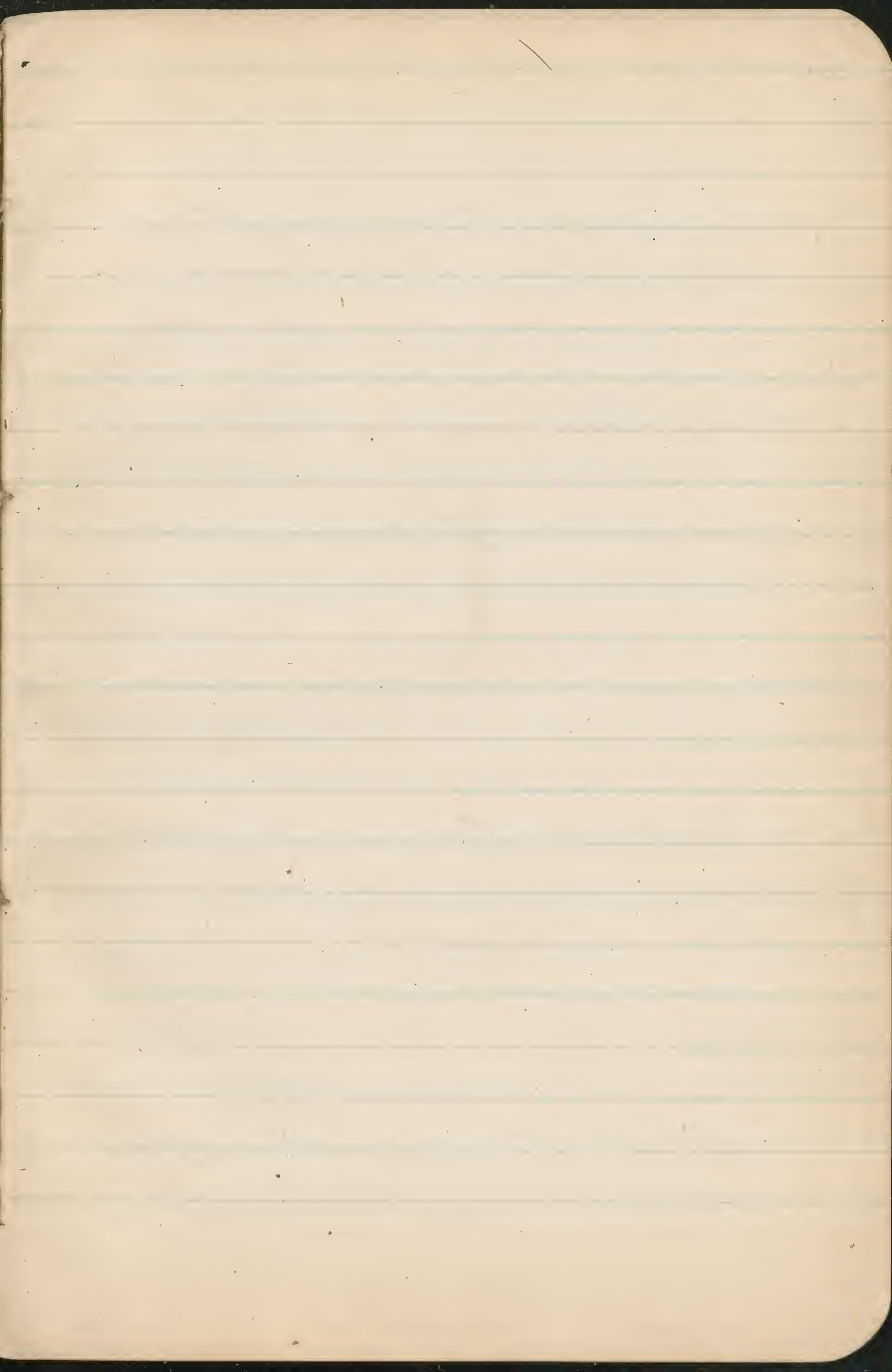
No head! In fragments as follows: 22 in., 33, 23, 7, 9,
12, 10, 4, 4, 5, $2\frac{1}{2}$; seven pieces together 8 in, nineteen large
joints together 14 in. = $15\frac{3}{4}$ inches.

Piece of 22 inches of 32 segments from $\frac{1}{2}$ an inch to 1 inch
long by 1 to $1\frac{1}{2}$ lines wide. Piece of 33 inches with
36 segments 20 to 24 mm long by 2 mm wide.

Generative aperture marginal, near posterior third *
of the segment, pigmented. Or rather just posterior to the
middle.

A piece of 3 segments measured 66 mm long. 1st joint 22 mm
by 3 mm wide; 2d 18 mm by 2 in front & 4 behind; 3d 25 mm by 2.
vagina pigmented.

? Is it a narrow jointed variety of *Taenia saginata*. The
mature joints to 1 in. long by $1\frac{1}{2}$ lines wide.



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